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STAR MICRONICS CO., LTD.

Star Micronics to Launch the SR-32JIII, a CNC Swiss-Type Automatic Lathe

– The renewal of the best-selling model for large-diameter machining –

Star Micronics Co., Ltd. has developed the SR-32JIII, a new Swiss-type automatic lathe (Note 1) in the SR series which is to be launched in August 2021. This model is focused on large-diameter machining needs such as for automotive parts or hydraulic and pneumatic devices.

Ever since the launch of the first model in 2005, the SR-32J series has been well received by the market and is one of the best sellers, and now the SR-32JIII is the latest large-diameter machining model in the series.

This model has two types, A and B. Type A has 5 linear-controlled axes mounted with a 6-axis unit for rear-end work, and Type B has 6 linear-controlled axes mounted with an 8-axis unit with Y2-axis control. Furthermore, there are three types of power tools for the gang-type tool post for front-side machining, the 5 and 6-axis types have two cartridge positions to make tool units interchangeable depending on the shape of the workpiece, and there is a special 6-axis type for cross machining. These provide a variety of tooling configurations to meet your needs.

As for its construction, the gang-type tool post employs our unique slanted slide guideway structure (Note 2) to enhance machine rigidity while enabling continuous machining with high accuracy for prolonged periods of time.

Because guide bush and non-guide bush (Note 3) specifications can be flexibly switched to meet diverse machining needs, you can machine your workpiece with the specifications that best-fit. The guide bush specification is useful for machining long workpieces such as motor shafts because it provides firm support of the workpiece which reduces flex and enables high accuracy machining. The machining of short parts such as nuts can be optimized with the non-guide bush specification, as it lessens the length of stock waste and reduces the overall cost of materials.

With a flip-up door with a wide opening, a swing type control panel to facilitate operations in the optimum position, and a redesigned tool post for rear-end work, this model is designed to pursue the operability and workability of the operator wherever possible. The NC system has also been enhanced with a variety of support features such as an alarm help function so you can check information about alarms on the NC screen.

■ Features of the SR-32JIII

[High Rigidity and Accuracy]

- The gang-type tool post utilizes the Slanted Slide Guideway for high rigidity.
- The non-guide bush specification utilizes the Spindle Head Slide Guideway Structure (Note 4), which ensures the rigidity of the main spindle by supporting the cutting load with the slide guideway surface.
- The Type B tool post designed for rear-end work employs a dovetail groove structure on the Y2-axis sliding section to ensure rigidity of the tool post.
- The main and sub spindles both use a built-in motor and sensor to improve indexing accuracy.

[High Functionality]

- Guide bush and non-guide bush specifications are switchable according to the length of parts to be machined.
- Three power tool types are available for the gang-type tool post; the 5-axis type cartridge cross drill unit, the 6-axis type cartridge cross drill unit, and the 6-axis type cross drill unit designed for cross machining.
- The Type A tool post is designed for rear-end work and is equipped with a 6-spindle unit. When combined with optional units, power tool units can be mounted in all positions.
- The Type B tool post is designed for rear-end work and has an 8-spindle unit with a Y2-axis control function. Power tool units can be mounted in all positions as standard.

NOTE 1: Swiss-type automatic lathe

The Swiss-type automatic lathe was devised as watch component processing machinery in Switzerland in 1870s. Known as a “sliding head-type automatic lathe” as well, it has remarkable characteristics of high-precision cutting of components with longer length compared with the diameter.

In general, if long and narrow parts are processed with a general-purpose lathe, flexure will occur on the workpiece, making finishing with the correct dimensions impossible. The Swiss-type automatic lathe utilizes a guide bush to function as a material steady rest. The tool, positioned at a certain distance from the guide bush, gives a cutting motion only the direction of outside diameter. This allows the workpiece to be cut accurately with no flexure. As for axial motion, the headstock, rather than the tailstock, moves while clamping a workpiece.

NOTE 2: Slanted slide guideway structure

The machine main body base and the tool post are slanted and each sliding surface is in a trapezoidal shape, called a dovetail structure. This structure allows each sliding surface to come into contact with its entire plane to improve the machine rigidity. The ball screw center and the cutting point are close to each other to reduce a load (moment load) applied in the direction of torsion caused by cutting resistance.

NOTE 3: Non-guide bush type

This is a sliding head-type automatic lathe which is designed based on the Swiss-type automatic lathe with a guide bush dismounted. Without a guide bush, it is not well suited for machining narrow and long parts. If the workpiece is short and does not deflect, however, such material can be handled effectively.

With the Swiss-type automatic lathe, the rear side of a bar material needs to be handled as waste as a portion equivalent to the size of the guide bush structure which functions as a steady rest for the material cannot be machined.

The non-guide bush type reduces the waste to about 1/3 in length compared to the waste made by the guide bush type.

NOTE 4: Spindle sleeve slide guideway structure

This structure has a sliding surface machined according to the outer diameter of the head stock spindle sleeve, which moves while clamping the workpiece. By eliminating the gap between the spindle sleeve and the guideway, the structure supports the cutting load applied to the head stock through the slide guideway and improves the head stock rigidity.